UNIVERSITI PUTRA MALAYSIA

CRITICAL SUCCESS FACTORS FOR ISO 9000 CERTIFICATION IN THE MALAYSIAN MANUFACTURING INDUSTRY

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By

ROSMINAH MOHD HUSSIN

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Partial Fulfilment of the Requirements for the Degree of Master of Science

April 2003

DEDICATION

To my husband
And
My parents

For all your support and understanding

With love and gratitude

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirements for the degree of Master of Science

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Chairman : Assoc. Prof. Dr. Ir. Md. Yusof Ismail

Faculty : Engineering

This study examines the critical success factors (CSFs) for ISO 9000 certification in the Malaysian manufacturing industry. A postal survey is used as research methodology. A newly designed set of questionnaire based on the identified CSFs has been sent to 600 randomly selected manufacturing companies in Malaysia. The results from an 11% responses or 66 companies indicate that management commitment is the most important critical factor, followed by teamwork, employee involvement, communication, understanding of organization's quality system, training, understanding of ISO 9000 standards, institutionalizing the ISO 9000 quality concept and ISO 9000 project planning. Recommendations are made for future use, based on the five most popular CSFs that companies need to undertake in developing a successful strategy for ISO 9000 certification. Suggestions for future work include: investigation on how to maintain the ISO 9000 certification, and on how to convert the existing system of ISO 9000: 1994 to the new ISO 9000:2000.

Abstrak tesis dikemukakan kepada Senat Universiti Putra Malaysia
sebagai memenuhi keperluan untuk ijazah Master Sains

FAKTOR-FAKTOR KEJAYAAN UNTUK PENDAFTARAN ISO 9000 DI KALANGAN INDUSTRI PEMBUATAN DI MALAYSIA

Oleh

ROSMINAH MOHD HUSSIN

April 2003

Pengerusi : **Prof. Madya Dr. Ir. Md. Yusof Ismail**

Fakulti : **Kejuruteraan**

Kajian ini meneliti faktor-faktor kejayaan pendaftaran ISO 9000 di kalangan industri pembuatan di Malaysia. Soal selidik melalui pos digunakan sebagai metodologi penyelidikan. Soal selidik baru berdasarkan faktor yang dikenalpasti di hantar kepada 600 buah firma pengeluaran yang dipilih secara rambang. Hasil maklumbalas pada kadar 11% atau dari 66 firma menunjukkan komitmen pengurusan merupakan faktor yang paling kritikal diikuti dengan kerja berpasukan, komitmen pekerja, komunikasi, kefahaman mengenai sistem kualiti organisasi, latihan, kefahaman mengenai piawaian ISO 9000, membudayakan konsep piawaian ISO 9000 dan perancangan projek. Cadangan faktor kejayaan dibuat sebagai strategi perlaksanaan untuk panduan pengguna bagi memperolehi sijil pendaftaran ISO 9000 pada masa akan datang. Dua cadangan untuk kajian ilmiah akan datang juga dikemukakan iaitu bagaimana menyenggara sistem ISO 9000 serta bagaimana mengubahsuai sistem ISO 9000:1994 sediada kepada ISO 9000:2000 yang baru.

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Rosminah Mohd. Hussin

I certify that an Examination Committee met on 3rd April 2003 to conduct the final examination of Rosminah Mohd Hussin on her Master of Science thesis entitled "Critical Success Factors for ISO 9000 Certification in Malaysian Manufacturing Industry" in accordance with Universiti Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Pertanian Malaysia (Higher Degree) Regulations 1981 . The Committee recommends that the candidate be awarded the relevant degree. Members of the Examination Committee are as follows:

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This thesis submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfillment of the requirement for the degree of Master of Science. The members of the Supervisory Committee are as follows:

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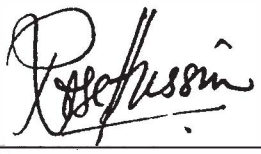
DECLARATION

I hereby declare that the thesis is based on my original work except for quotations and citations, which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any degree at UPM or any other institutions.



ROSMINAH MOHD. HUSSIN

Date: 29/4/2003

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

CSF	-	Critical Success Factors
FMEA	-	Failure Mode and Effect Analysis
ISO	-	International Organization for Standardization
MD	-	Managing Director
QMR	-	Quality Management Representative
SIRIM	-	Standards and Industrial Research Institute of Malaysia
SMI	-	Small and Medium Industries
SME	-	Small and Medium Enterprises
SPC	-	Statistical Process Control
SPSS	-	Statistical Product and Service Package
TQM	-	Total Quality Management

CHAPTER 1

INTRODUCTION

1.1 General

Although the ISO 9000 series of quality standards was first launched in 1987, many local companies especially the small and medium enterprises (SMEs) adopted the "wait and see" attitude. However in recent years, the growing number of local companies that have been issued the ISO 9000 certification from the Standards and Industrial Research Institute of Malaysia (SIRIM) reflects increasing awareness of the need to meet the internationally accepted standards to gain market access.

Despite some negative criticism given to ISO 9000 in other countries especially by those who were disappointed with the results of ISO 9000 registration (Van Houtert, 1995; Miros and Dale, 1996; Van der Wiele and Brown, 1997), Malaysian manufacturers are actively pursuing the ISO 9000 certification. In a briefing session at the SIRIM office in Shah Alam, Selangor, it is noted that as at 28th September 2001, a total of 2,139 companies have been issued the MS ISO 9000 by SIRIM. The increasing numbers in the quality management certification is an indication that Malaysia companies are ready to face globalization and the rapid changes that comes with it.

1.2 Research Need

While many companies are recognizing the benefits of and the need for certification of ISO 9000, there is very little research done on the critical success factors for its certification in Malaysia. This thesis will identify some of the critical success factors for ISO 9000 certification in the Malaysian context. Findings from the research will add to the knowledge and understanding of the subject, especially with regard to its application in Malaysia.

The results from this study will be valuable to the information seekers on the ISO 9000 issues as follows:

- Consultants and researchers could use the data for reference in their future investigations;
- Academicians and students could use the data as a new source of local reference in local situation;
- Quality managers or management staff could use the information to help them focus on components that need to be looked into at the start in their journey in seeking the ISO 9000 certification that may result in cost and time saving; and
- Employees could use the information that will enable them to appreciate the problems that are being faced by the management in their respective organizations in pursuing the ISO 9000 certification.

1.3 Research Objective

The objective of the research is to identify success factors that are critical for ISO 9000 certification in a group of Malaysian manufacturers. It is hope that the study will reveal the current critical success factors for ISO 9000 certification in Malaysia and can be used as future reference.

1.4 Layout of the Thesis

The thesis is structured in five chapters as listed below:

- Chapter One gives the introduction and set the foundation for the research undertaking;
- Chapter Two reviews the related literature on the ISO 9000 and the possible critical success factors that have been identified by previous researchers;
- Chapter Three describes the research methodology and design of the questionnaires;
- Chapter Four focuses on the results and discussion of the findings and
- Chapter Five gives the conclusions of the findings and makes some recommendations for future application for successful ISO 9000 certification, as well suggestions for future work that can be carried out.

CHAPTER 2

LITERATURE REVIEW

2.1 General

Towards the end of last century ISO 9000 series of quality system became one of the popular topics in quality improvement initiatives. Many questions with regard to their meaning, benefits, implementation process and critical success factors for their certification were raised. Huge amount of ISO 9000 certificates were issued to various companies. Although many literature reviews indicate that ISO 9000 certificate is no guarantee for a successful quality assurance (QA) system, many companies are still starting up quality initiatives with one objective in mind, i.e. 'to achieve ISO 9000 certification'.

The interest in pursuing ISO 9000 certification in some countries is growing exponentially. However, not all companies that embarked on the selected project were successful in their pursuits. Some have abandoned them along the way. The terms 'certification' or 'registration' can be used interchangeably (Label and Priester, 1996). Both require that companies set up the internal quality systems that are subjected to audit by third party prior to certification. To retain the certified status, independent assessment of compliance with the ISO 9000 standards must be performed on a regular basis.

The literature review will discuss the following areas: what is ISO 9000, ISO 9000 documentation, ISO 9000 and TQM, ISO 9000 and QS 9000, ISO 9000 in Malaysia, steps for certification, reasons for ISO 9000 certification, benefits of ISO 9000 certification, criticism of ISO 9000, cost of ISO 9000 certification, ISO 9000:2000, critical success factors, management commitment, employee commitment, understanding of ISO 9000 standards, understanding of organization's quality system, communication, institutionalizing the ISO 9000 quality system concept, project planning, teamwork and training

2.2 What is ISO 9000

ISO, pronounced "ice-oh" is not an acronym (Kantner, 1994; Miller *et al.*, 1998). It is derived from a Greek word 'isos' meaning equal (Chappell, 1998), or 'homogeneous', as in isosceles triangles or isometrics. Another way to pronounce ISO 9000 is 'eye-so nine thousand' (Gardner, 1998). The ISO 9000 is a family of quality standards and guidelines for assuring of almost anything. Although the early emphasis on ISO 9000 was among manufacturing companies, these quality standard are spreading throughout other sectors such as in insurance company (Stephens, 1996), hydrocarbon processing industry (Straitsz, 1996), records management (Brumm, 1996), pharmacy (Hall, 1997), software development (Walker, 1997), accounting firms (Miller *et al.*, 1998), government (Lowery, 1998), library (Osman *et al.*, 1998) education (Peters, 1999; Kanji *et al.*, 1999; Kanji and Tambi, 1999; Houston, 1999; Waks and Frank, 1999; Mohd. Ali, 1999; Moreland and Clark, 1998; Lundquist, 1997), construction industry

(Pheng *et al.*, 1999), engineering consultancies (Tang and Kam, 1999), and in hospital (Staines, 2000). Even lawyers, doctors, schools (Elmuti, 1996), engineers and designers (Schoonmaker, 1997) are seeking certification

The standards were first developed in 1987 by the International Organization for Standardization (Abraham, *et al*, 2000). It is a non-profit organization comprised of members from over 91 different countries. This organization was first established in 1946, based in Geneva, Switzerland. The standards are based on British Standards BS 5750-1970. The certification awarded is recognized around the world.

Miller *et al*. (1998) explained that one of the driving forces behind the creation of ISO 9000 was that many companies, usually the suppliers, were facing multiple second party audits (customers) to see if their products are meeting certain quality standards. Some suppliers face 30-40 times quality audit in one year. To reduce the number of audits, a third -party auditor was employed to attest to the quality of the products and the certificates obtain by these companies will then be accepted by the customers. ISO 9000 is regarded as a quality standard because it requires management to document and support its quality management system.

The ISO 9000 standards have different registration programs for different business structures. The three main standards are ISO 9001, ISO 9002 and ISO 9003. Elmuti (1996) outlined the basic descriptions of ISO 9000 standards as follows:

ISO 9001 confirms the conformance of processes from the primary stage of product development (design), through production, installation, testing and servicing. It is the most comprehensive of all the ISO 9000 standards.

ISO 9002 deals with the procurement, production, installation, and servicing areas of an organization. It usually applies to the process industries.

ISO 9003 addresses only the detection and control of problems during final inspection. It applies to companies whose products and services that can be adequately assessed by testing and inspecting.

The principles underlying ISO 9000 quality standards are:

Say what you do	- document each step in the company's business process
Do what you say	- ensure that all processes adhere to written procedure
Show what you have done	- document evidence that the quality system meets ISO 9000 requirements and is being implemented effectively.
Verify	- conduct periodic internal audits to ensure continued compliance and effectiveness of the quality system.

The ISO 9000 standard focuses on 20 aspects of a quality program that are subject to rigorous audit during the certification process. Each section relates to a specific aspect of satisfying customers. Rabbit and Bergh (1994) suggested that when trying to

determine how each section applies to an organization, one should ask how it relates to customers expectations. The elements that are contained in section 4 of the ISO 9000 are listed below (Rabbit and Bergh, 1994; Wilson, 1996, Lamprecht, 1996):

4.1 Management responsibility

4.2 Quality system

4.3 Contract review

4.4 Design control

4.5 Document and data control

4.6 Purchasing

4.7 Control of customer supplied product

4.8 Product identification and product traceability

4.9 Process control

4.10 Inspection and testing

4.11 Control of inspection, measuring and test equipment

4.12 Inspection and test status

4.13 Control of non-conforming product

4.14 Corrective action and preventive action

4.15 Handling, storage, packaging, preservation, and delivery

4.16 Control of quality records

4.17 Internal quality audits

4.18 Training

4.19 Servicing

4.20 Statistical techniques.